
Easier Environmental Site Design (ESD)

Montgomery County Public Meeting

June 5, 2010

10:00am-12:00pm

Rockville Library, First Floor Meeting Room

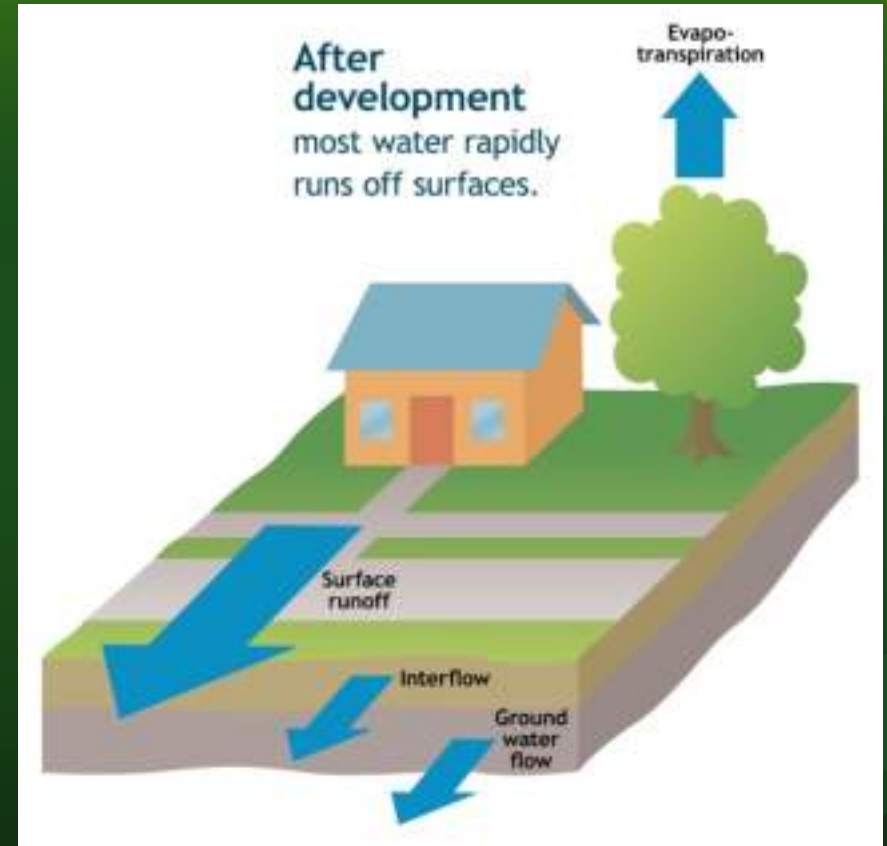
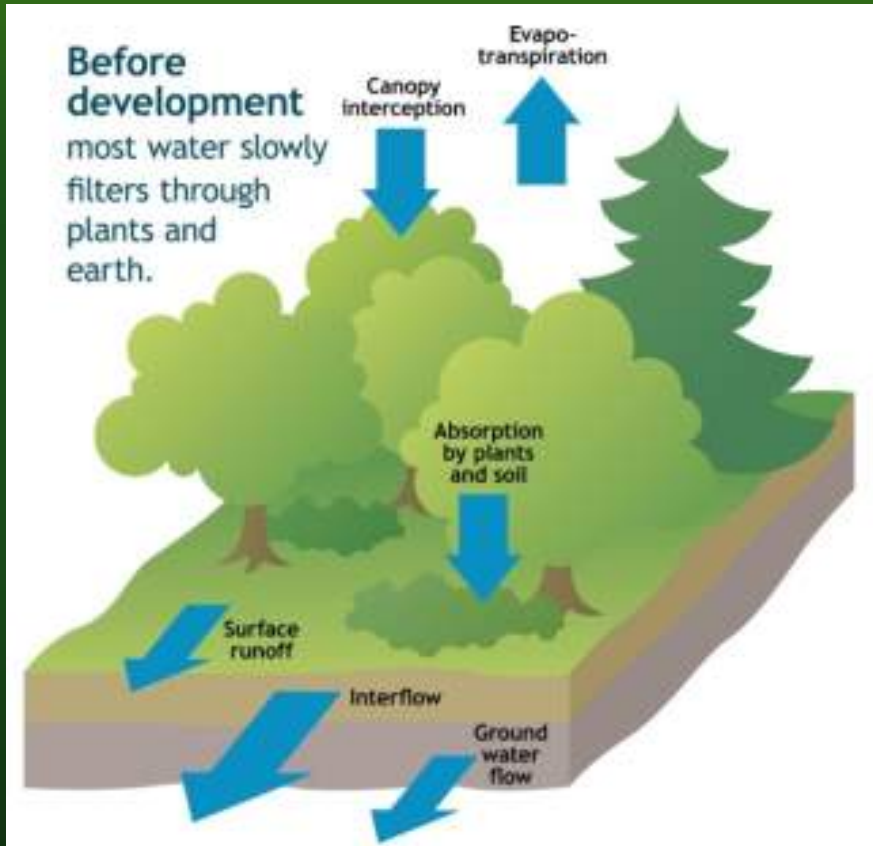


Montgomery County's NPDES Permit and Environmental Site Design

- Stormwater Impacts
- NPDES Permit
- Introduction to ESD



Stormwater Impacts



Stormwater Permit

first issued in 1996

- National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit, aka Stormwater Permit
 - Issued by Maryland Department of the Environment (MDE) to control pollution from storm drain system
 - Permit term of five years
 - Third round issued February 2010
 - Third round applies to entire County, including Public Schools, except areas covered under other MS4 permits
 - Cities of Gaithersburg, Rockville, and Takoma Park
 - Lands under the control of State (including M-NCPPC, WSSC, and SHA) or Federal agencies
-

Requirements for Third Round

- Develop Watershed Restoration Implementation Strategy for next five years
 - Accelerate watershed restoration for additional 20% of MS4 impervious cover by end of permit cycle
 - Achieve reductions for Total Maximum Daily Loads (TMDLs)
 - TMDLs are pollutant load budgets
 - Meet commitments in Potomac Trash Free Treaty
 - Achieve Anacostia Trash TMDL
 - Increase public outreach and stewardship opportunities
- Increase use of environmental site design/low impact development (ESD/LID)

Zoning Code Rewrite: Sustainability

Sustainability

Tell us what you think about our County's Sustainable Practices

Montgomery County is doing well OR Montgomery County should do better

	waste reduction	
	stormwater	
	water reuse & irrigation	
	energy	
	buildings & neighborhoods	
	tree canopy & heat island	
	parking	
	food production	
	lighting	

energy buildings & neighborhoods tree canopy & heat island



Introduction to ESD

- Small scale stormwater management
- Non-structural techniques
- Better site planning
- Mimic natural hydrology
- Minimize the impact of development
- Conserve natural features
- Minimize impervious surfaces
- Slow down runoff
- Infiltrate and evapotranspire
- Innovative technologies



Typical Centralized Detention Pond

Small Scale, Integrated ESD Practices

ESD Practices

Alternative Surfaces

- Green Roofs
- Permeable Pavements
- Reinforced Turf

Non-Structural Practices

- Disconnection of Rooftop Runoff
- Disconnection of Non-Rooftop Runoff
- Sheetflow to Conservation Areas

Microscale Practices

- Rainwater Harvesting
- Submerged Gravel Wetlands
- Landscape Infiltration
- Infiltration Berms
- Dry Wells
- Micro-Bioretenion
- Rain Gardens
- Swales
- Enhanced Filters
- Soil Compost Amendments
- Stormwater Planters
- Expanded Tree Pits
- Stormwater Curb Extensions
- Foundation Planters

ESD Landscape Positions

- Rooftops



- Around Buildings



- Streets and Streetscapes



- Parking Lots



- Walkways and Other Paved Areas



- Landscape



Rooftops → Green Roofs



Gibbs Elementary, LEED, Germantown



University of Maryland Shady Grove



Eastern Village Condo Green Roof

Around Buildings → Disconnection of Rooftop Runoff



Rockville Senior Center, Source: Biohabitats

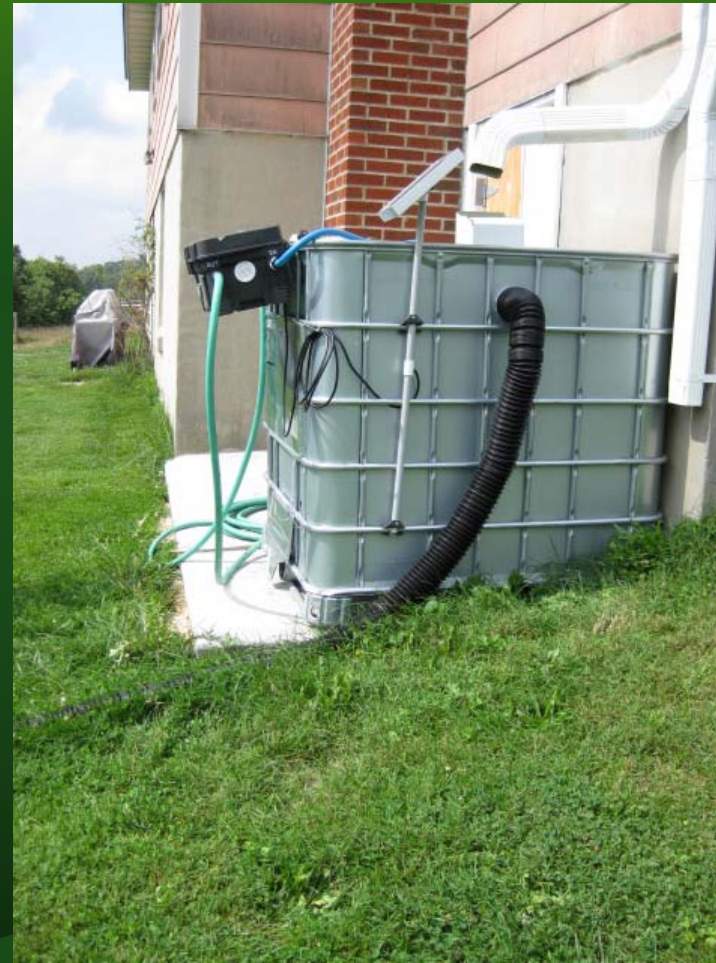


Gaithersburg Community Center, Source: Biohabitats

Around Buildings → Rainwater Harvesting



Rockville Senior Center Rain Barrel, Source: Biohabitats



Rainscapes Cistern

Around Buildings → Microscale ESD Practice



Lafayette College, PA, Source: Biohabitats Photo Simulation

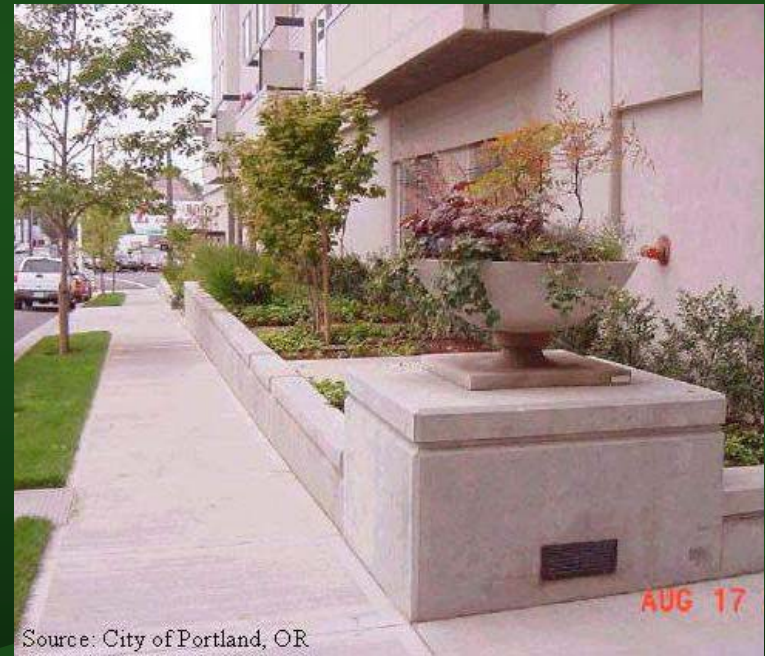
Around Buildings → Foundation Planters



Portland, OR, Source: City of Portland, OR



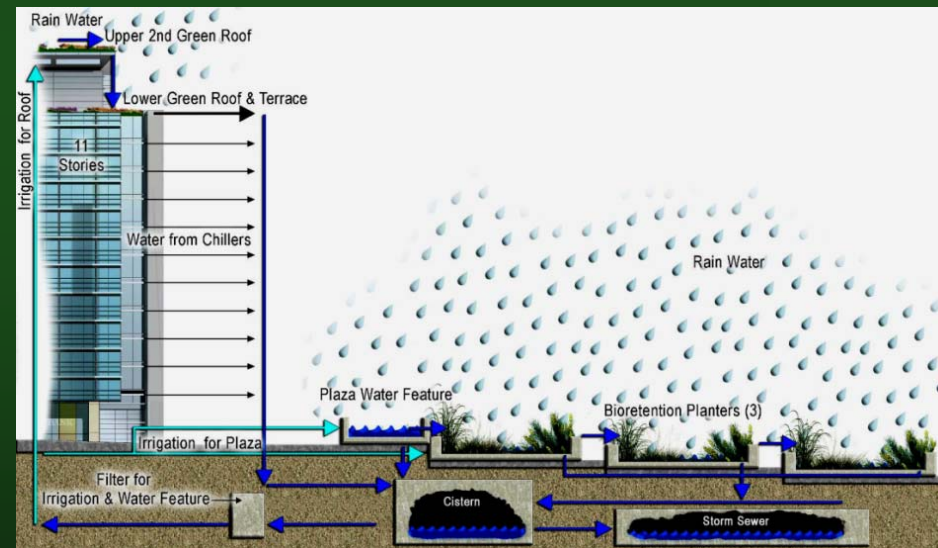
Washington, DC, Source: U.S. EPA



Source: City of Portland, OR

Portland, OR, Source: City of Portland, OR

Around Buildings → Bioretention



1050 NW K St, D.C. by Timmons Group

Redevelopment Project: Existing site 97% impervious; New Design 67%
Source: Lu Gay Lanier, Timmons Group

Streets and Streetscapes → Stormwater Planters



Source: Portland 2004 Bureau of Environmental Services Manual, Appendix H: Stormwater Management Facility Photos, September 2004 Stormwater Management. <http://www.portlandonline.com/BES/index.cfm?c=35122> Manual.



Lansing, MI



Source: Seattle Public Utilities. "Bioretention". www.ci.seattle.wa.us/util/naturalsystems/

Streets and Streetscapes → Swales, Stormwater Planters, Curb Extensions



Fernwood Road dry swales, Source: DOT

Streets and Streetscapes → Swales, Stormwater Planters, Curb Extensions



Cloverly Elementary

Streets and Streetscapes → Swales, Stormwater Planters, Curb Extensions



Gaithersburg, MD, Source: Gallagher, Christine. 2009. "Green Streets Low Impact Development Initiative in Gaithersburg, MD"

Parking Lots → Permeable Pavements



Bethesda Methodist Church pervious concrete



Navy Yard, Washington, DC

Parking Lots → Micro-bioretenction, Swales



Colesville Health Center, Source: MC DEP

Parking Lots → Micro-bioretenction, Swales



Portland, OR, Source: Portland 2004 Bureau of Environmental Services Manual

Walkways and Other Paved Areas → Permeable Pavements



University of North Carolina, Chapel Hill, NC, Source: Biohabitats

Walkways and Other Paved Areas → Permeable Pavements



Good Hope Road pervious concrete sidewalk, DOT

Landscape → Microscale Practices



Dennis Avenue, Source: MC DEP



Sligo Creek Recreation Center, Source: MC DEP

General Questions?

Identifying Potential Impediments to ESD in County Code

- Code Review Process
- Code Structure & Development Approval Process
- Findings and Recommendations



Identifying Potential Impediments to ESD in County Code

Montgomery County's renewal MS4 permit states:

Within one year of State adoption of regulations required under the Act, review existing planning and zoning and public works ordinance and other local codes to identify impediments to, and opportunities for, promoting the implementation of environmental site design (ESD) to the MEP.

Code Review Process

■ Reviewed:

- Selected Chapters of the Montgomery County Code
- Development Approval Process
- Commercial-Residential Zoning Text Amendment

■ Identified:

- Barriers
- Gaps
- Opportunities

- Developed recommendations for Code change
 - Vetted by Clean Water Task Force (CWTF)
 - Refined recommendations for Code change based on comments and input from CWTF members
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Code Structure

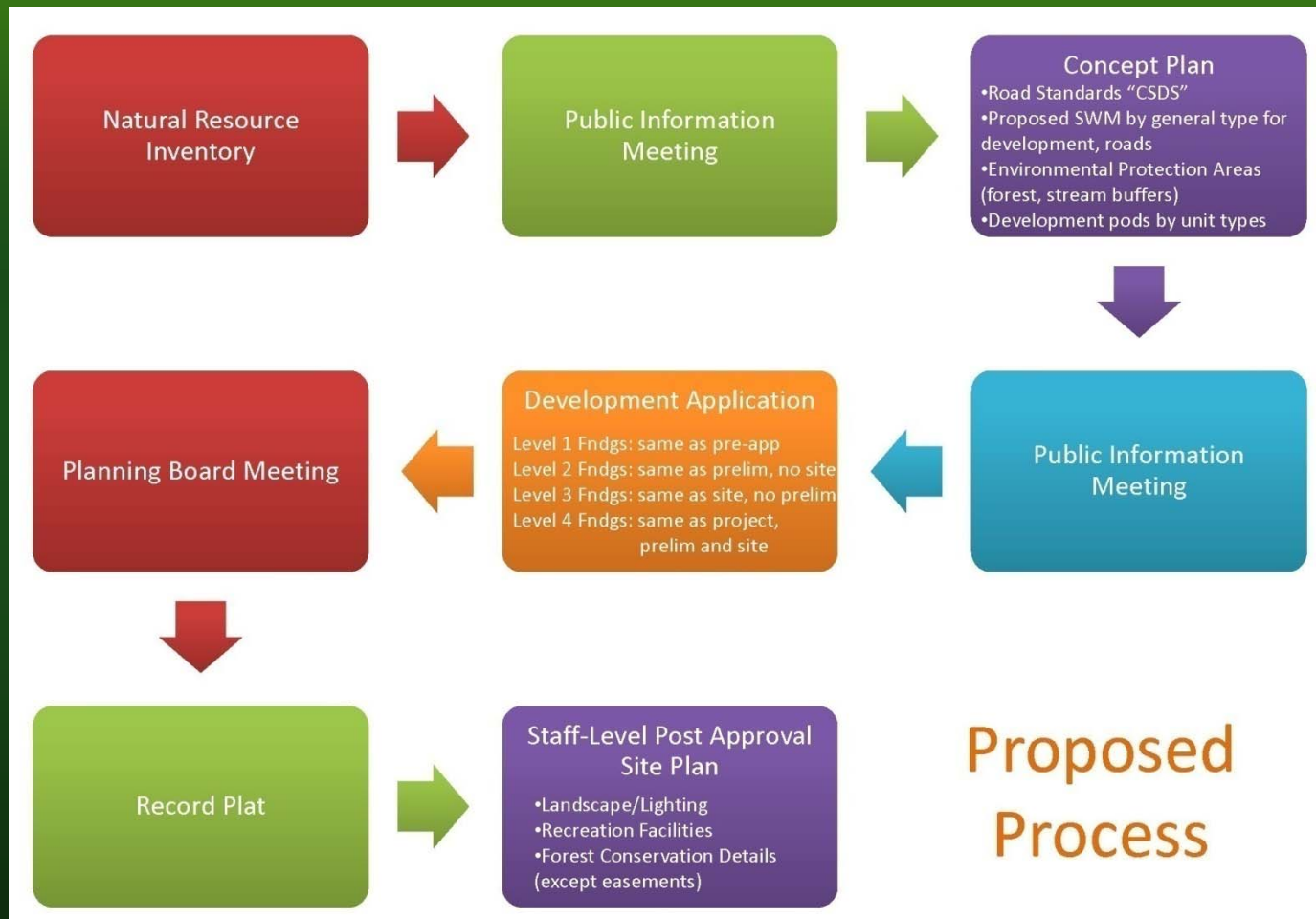
<http://www.montgomerycountymd.gov/mcgmpl.asp?url=/Content/countyatt/charter.asp>

- + Chapter 1. General Provisions.
- + Chapter 1A. Structure of County Government.
- + Chapter 2. Administration. [Note]
- + Chapter 2A. Administrative Procedures Act. [Note]
- + Chapter 2B. AGRICULTURAL LAND PRESERVATION.*
- + Chapter 3. Air Quality Control. [Note]
- + Chapter 3A. Alarms. [Note]
- + Chapter 4. Amusements. [Note]
- + Chapter 5. Animal Control. [Note]
- + Chapter 5A. Arts and Humanities. [Note]
- + Chapter 6. Auction Sales.
- + Chapter 6A. Beverage Containers. [Note]
- + Chapter 7. Bicycles. [Note]
- + Chapter 7A. Off-the-road Vehicles
- + Chapter 8. Buildings. [Note]
- + Chapter 8A. Cable Communications. [Note]
- + Chapter 9. Reserved.*
- + Chapter 9A. Reserved. [Note]
- + Chapter 10. Reserved.*
- + Chapter 10A. Child Day Care Facilities Loan Program.
- + Chapter 10B. Common Ownership Communities. [Note]
- + Chapter 11. Consumer Protection. [Note]
- + Chapter 11A. Condominiums. [Note]
- + Chapter 11B. Contracts and Procurement. [Note]
- + Chapter 11C. Cooperative Housing. [Note]
- + Chapter 12. Courts. [Note]
- + Chapter 13. Detention Centers and Rehabilitation Facilities. [Note]
- + Chapter 13A. Reserved*.
- + Chapter 14. Development Districts.
- + Chapter 15. Eating and Drinking Establishments. [Note]
- + Chapter 16. Elections. [Note]
- + Chapter 17. Electricity. [Note]
- + Chapter 18. Elm Disease. [Note]
- + Chapter 18A. ENVIRONMENTAL SUSTAINABILITY [Note]
- + Chapter 19. Erosion, Sediment Control and Storm Water Management. [Note]
- + Chapter 19A. Ethics. [Note]
- + Chapter 20. Finance. [Note]
- + Chapter 20A. Special Obligation Debt.
- + Chapter 21. Fire and Rescue Services.*
- + Chapter 22. Fire Safety Code. [Note]
- + Chapter 22A. Forest Conservation - Trees. [Note]
- + Chapter 23. Gaming. [Note]

- + Chapter 24. Health and Sanitation.
- + Chapter 24A. Historic Resources Preservation. [Note]
- + Chapter 24B. Homeowners' Associations. [Note]
- + Chapter 25. Hospitals, Sanitariums, Nursing and Care Homes. [Note]
- + Chapter 25A. Housing, Moderately Priced. [Note]
- + Chapter 25B. Housing Policy. [Note]
- + Chapter 26. Housing and Building Maintenance Standards.*
- + Chapter 27. Human Rights and Civil Liberties.
- + Chapter 27A. Individual Water Supply and Sewage Disposal Facilities. [Note]
- + Chapter 28. RESERVED.* [Note]
- + Chapter 29. Landlord-Tenant Relations. [Note]
- + Chapter 29A. Legislative Oversight.
- + Chapter 30. Licensing and Regulations Generally. [Note]
- + Chapter 30A. Montgomery County Municipal Revenue Program. [Note]
- + Chapter 30B. Reserved.*
- + Chapter 30C. Motor Vehicle Towing and Immobilization on Private Property. [Note]
- + Chapter 31. Motor Vehicles and Traffic.
- + Chapter 31A. Motor Vehicle Repair and Towing Registration. [Note]
- + Chapter 31B. Noise Control. [Note]
- + Chapter 31C. New Home Warranty and Builder Licensing. [Note]
- + Chapter 32. Offenses-Victim Advocate. [Note]
- + Chapter 33. Personnel and Human Resources. [Note]
- + Chapter 33A. Planning Procedures. [Note]
- + Chapter 33B. Pesticides. [Note]
- + Chapter 34. Plumbing and Gas Fitting. [Note]
- + Chapter 35. Police. [Note]
- + Chapter 36. Pond Safety. [Note]
- + Chapter 36A. Public Service Company Underground Facilities.
- + Chapter 37. Public Welfare. [Note]
- + Chapter 38. Quarries. [Note]
- + Chapter 38A. Radio, Television and Electrical Appliance Installation and Repairs.
- + Chapter 39. Rat Control. [Note]
- + Chapter 40. Real Property. [Note]
- + Chapter 41. Recreation and Recreation Facilities. [Note]
- + Chapter 41A. Rental Assistance. [Note]
- + Chapter 42. Revenue Authority. [Note]
- + Chapter 42A. Ridesharing and Transportation Management. [Note]
- + Chapter 43. Reserved.*
- + Chapter 44. Schools and Camps. [Note]
- + Chapter 44A. Secondhand Personal Property. [Note]
- + Chapter 45. Sewers, Sewage Disposal and Drainage. [Note]
- + Chapter 46. Slaughterhouses.

- + Chapter 47. Vendors.
- + Chapter 48. Solid Wastes. [Note]
- + Chapter 49. Streets and Roads.*
- + Chapter 49A. Reserved.*
- + Chapter 50. Subdivision of Land. [Note]
- + Chapter 51. Swimming Pools. [Note]
- + Chapter 51A. Tanning Facilities. [Note]
- + Chapter 52. Taxation.* [Note]
- + Chapter 53. TAXICABS.*
- + Chapter 53A. Tenant Displacement. [Note]
- + Chapter 54. Transient Lodging Facilities. [Note]
- + Chapter 54A. Transit Facilities. [Note]
- + Chapter 55. Reserved.
- + Chapter 56. Urban Renewal and Community Development. [Note]
- + Chapter 56A. Video Games. [Note]
- + Chapter 57. Weapons.
- + Chapter 58. Weeds. [Note]
- + Chapter 59. Zoning.

Development Approval Process (DAP)



Note: Chapter 19 (Erosion, Sediment Control and Storm Water Management) was not reviewed as part of this process. Revisions to Chapter 19 are already occurring to comply with a separate timeline from MDE.

Code Review

Significant Barriers, Gaps, or Opportunities	Fewer but Important Barriers, Gaps, or Opportunities
<ul style="list-style-type: none"> • Ch 59. Zoning • Development Approval Process 	<ul style="list-style-type: none"> • Ch 22. Fire Safety Code • Ch 26. Housing and Building Maintenance Standards • Ch 49. Streets and Roads • Ch 50. Subdivision of Land • Commercial-Residential ZTA
Limited Barriers, Gaps, or Opportunities	No Barriers or Gaps
<ul style="list-style-type: none"> • Ch 8. Buildings • Ch 22A. Forest Conservation - Trees • Ch 40. Real Property • Ch 41. Recreation and Recreation Facilities • Ch 58. Weeds • Trees, Approved Technical Manual (MNCPPC) 	<ul style="list-style-type: none"> • Chapter 14. Development Districts • Chapter 18A. Environmental Sustainability • Chapter 21. Fire and Rescue Services • Chapter 24B. Homeowners' Associations • Chapter 27A. Individual Water Supply and Sewage Disposal Facilities • Chapter 36. Pond Safety • Chapter 44. Schools and Camps • Chapter 45. Sewers, Sewage Disposal and Drainage • Chapter 54A. Transit Facilities • Chapter 56. Urban Renewal and Community Development • Guidelines for Environmental Management of Development in Montgomery County (Maryland National Capital Park and Planning Commission)

Findings and Recommendations:

General

- Consistent terminology
- Increased building height or density incentives
- Increased green area requirements
- Vegetated ESD practices as green area
- Green roofs as green area
- Permeable pavement and reinforced turf standards
- ESD practices within road rights-of-way when possible
- ESD on landscape, site concept, and development plans
- Reference Chapter 19

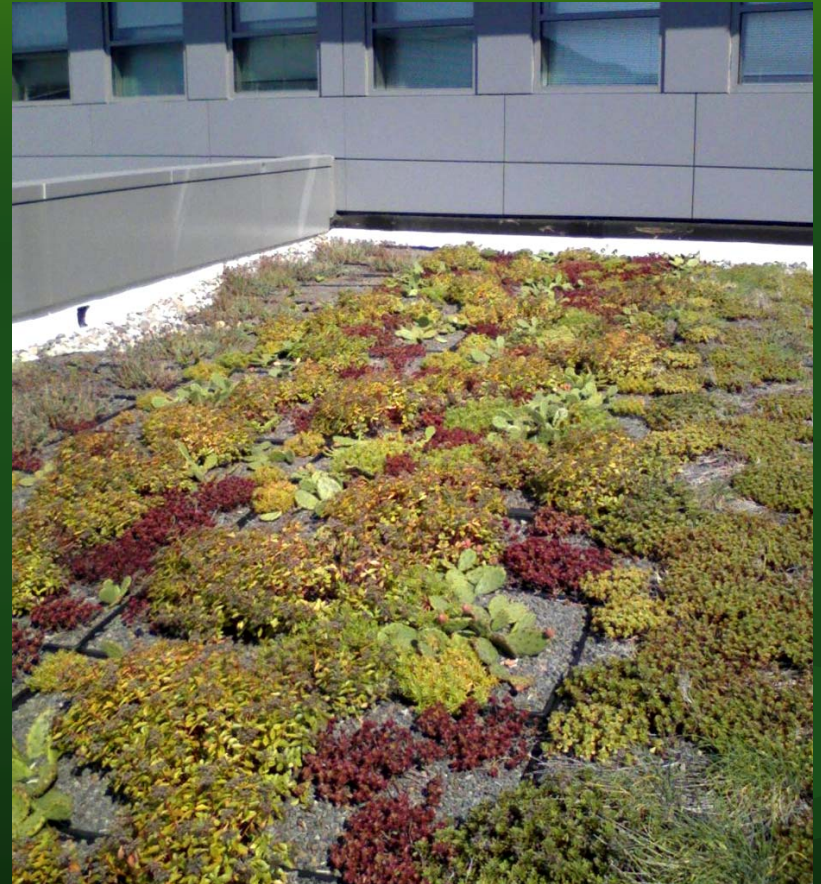
Findings and Recommendations: Rooftops (Green Roofs)

■ Barriers

- Air rights, building heights, rooftop items allowed, and the definition of “Green Area”
- Rate green roofs in a different fire safety code rating, not prohibited Class A (Ch 22)

■ Opportunities

- Incentivize green roofs with increased allowable building height (Ch 59)
- Include green roofs in the definition of “Green Area” in high density (Ch 59)



Findings and Recommendations: Around Buildings (Rainwater Harvesting)

■ Barriers

- State that some rain barrels and cisterns can fit under decks, underground, or in narrow spaces to avoid blocking fire access (Ch 22)

■ Opportunities

- Points towards LEED Silver requirement
- Revise plumbing codes for rainwater use for irrigation (Ch 59)
- Allow below ground cisterns in Rights of Ways (Ch 59)
- Allow above ground barrels or cisterns in conjunction with steps, terraces, and porches in yards (Ch 59)
- Allow rainwater harvesting storage within inner courts or storage structures within buildings (Ch 59)



Findings and Recommendations: Streets and Streetscapes

■ Barriers

- Allow enough street and sidewalk width for stormwater planters, expanded tree pits, and stormwater curb extension (Ch 49, 59)

■ Gaps

- Require ESD in street ROW landscape strips (Ch 59)
- Require that bioretention tree pits be large enough to support tree health (Ch 49, 59)

■ Opportunities

- Opportunity for stormwater planters, expanded tree pits, and stormwater curb extension (Ch 49, 59)
- Encourage permeable paving (Ch 49, 59)



Findings and Recommendations: Parking Lots

■ Barriers

- Specify permeable paving & reinforced turf for parking, overflow parking (Ch 59)
- Specify disconnection & drainage into conservation areas, landscape infiltration, micro-bioretenion areas within the parking lot, swales, etc. (Ch 59)

■ Gaps

- Include ESD features in landscaping category (Ch 59)

■ Opportunities

- Increase min. landscaping requirement to 10 or 15% (Ch 59)
- Increase shade/tree canopy req. (Ch 59)



Findings and Recommendations: Walkways and Other Paved Areas

■ Barriers

- Include types of pervious pavement and reinforced turf in pavement definition (Ch 49)

■ Gaps

- Include a list of pre-approved permeable pavement options which meet local fire access requirements (Ch 22)

■ Opportunities

- Encourage use of permeable pavement or reinforced turf for typical impervious surfaces, such as walkways and parking facilities (Ch 59)



Findings and Recommendations: Landscape (Micro-Bioretention)

■ Opportunities

- Landscape infiltration, micro bioretention, rain gardens, and swales could all be specifically encouraged through revisions (Ch 59)
- Minimum sizes of planting islands and other landscaping areas should be large enough to allow for these ESD practices (Ch 59)
- When ESDs include trees as part of bioretention planting, soil areas should be allowed enough width to support tree health (Ch 59)



Findings and Recommendations:

Development Approval Process (DAP)

- Stormwater management is not formally introduced into the DAP until many site elements have been laid out
- Site plans and details submitted to different agencies for review do not always show the proposed locations of stormwater BMPs
- Rezoning applications are often required to provide a detailed concept plan early in the DAP
- NRI/FSD does not identify areas on a development site that may be appropriate locations for stormwater management
- * DAP Conflict Resolution Working Group currently examining lead agency and stakeholder agency designations

Findings and Recommendations:

Development Approval Process (DAP)

- Require applicants to attend a formal pre-application meeting.
- Require ESD practice locations as a base layer on all site plans reviewed during the DAP.
- Develop and adopt standard checklists and narrative requirements for ESD to the MEP.

ESD to the Maximum Extent Practicable (MEP)

Designing stormwater management systems so that all reasonable opportunities for using environmental site design planning techniques and treatment practices are exhausted and, only where absolutely necessary, a structural best management practice is implemented.

MEP Determination and the Development Approval Process

- MEP determination should be different for **new development and redevelopment**.
- **Desired density** set forth by master plans and sector plans should be factored into MEP determination.
- MEP determination will require **early coordination** across agencies involved in the DAP.
- As lead agency, MEP determination will ultimately be made by the **DPS**.
- A **checklist** to be completed by the applicant and reviewed by DPS may help to **ensure equitability** in MEP determination.
- **Documentation** of the MEP determination for every new development and redevelopment project is essential.

Necessary and Easily Implemented Code Changes

Chapter, Section	Comment Type	Topic	Preliminary Recommended Changes
Chapter 8. Buildings			
8 - 8.29B	Gap & Opportunity	Safe conveyance of stormwater	This relates to all ESD practices. Change terms in this section to match ESD practice terms and include any special considerations for practices.
8 - 8.42 & 8.49	Opportunity	LEED Silver requirement	Encourage using ESD practices which also qualify for LEED credits (SS 6.1 & 6.2 Stormwater Design, SS 7.1 & 7.2 Heat Island Effect, etc.).
Chapter 18. Environmental Sustainability			
18 - 18A	Opportunity	Building insulation & energy efficiency	Consider incentives and loan fund eligibility for green roofs for their reduction of building cooling energy demands.
Chapter 22. Fire Safety			
22 - 22.98	Barrier	Green roof class rating	Identify green roofs as a different and allowable fire safety class rating but take vegetation type and roof accessibility into account.
Chapter 26. Housing and Building Maintenance Standards			
26 - 2 & 5	Barrier / Gap	Nuisance definition	Avoid inclusion of ESD practices as nuisance through standards which prevent basement flooding or inappropriate ponding.
Chapter 40. Real Property			
40 - Article III.	Gap	Sale of real property	Include on-lot ESD practices in property sale disclosures, require seller to get an inspection/certification by a PE, and provide maintenance requirements.

For More Detail

Implementing Environmental Site Design in Montgomery County

DRAFT

Prepared for:

Montgomery County Department of Environmental Protection
255 Rockville Pike, Suite 170
Rockville, MD 20850

Prepared by:

Biohabitats, Inc.
2081 Clipse Park Road
Baltimore, MD 21221

In collaboration with:

Horsley Witten Group
90 Route 6A
Sandwich, MA 02563

RESOLVE
1255 23rd Street, NW, Suite 875
Washington, DC, 20037

May 26, 2010

Relevant Code, Standard, Specification or Policy: ALL CODES

ROW NUMBER	Relevant ESD Type	Section #	Opportunity, Barrier, or Gap	Preliminary Recommended Changes	Relevant Other Code	Notes and Questions
1						
2	* All worksheets in this workbook are formatted to print on 11 x 17" (tabloid) paper					
3		Opportunity				
4		Barrier or Gap				
5		Opportunity and Barrier or Gap				
6						
7	CHAPTER 8. BUILDINGS					
8						
9	all	Ch8 Sect.8-29B	Gap	Consider expanding to include all residential lots.		Applies to lots smaller than 15,000 square feet.
10	disconnection of roof runoff	Ch8 Sect.8-29B	Barrier Gap			possible barrier/gap - safe conveyance; this is a great code as it ensures safe conveyance of stormwater. This needs to be considered when encouraging downspout disconnects as it relates to where the disconnected downspouts drain.
11	rainwater harvesting & disconnection of roof runoff	Ch8 Sect.8-29B	Opportunity			possibly encourages - with use of rain barrel, cistern, detention, etc; same code as above, but listed separately as an opportunity
12	all	Ch 8 Sec.8-29B(b)(1)	Opportunity			Promotes the use of on-lot practices, including ESD practices.

DRAFT for Review, May 6, 2010

Specific Comments

<http://www.montgomerycountymd.gov/stormwaterpermit>

Open Discussion

Next Steps

County's MS4 permit states that the code modification must occur "*within two years of State adoption of regulations under the act*" which means the modifications are required by May 4, 2011.

- DEP will lead efforts to adopt the recommended changes which have been identified by consensus as easy to implement.
- For recommended changes which have been identified as difficult or very difficult to implement, DEP will lead further discussion amongst County agencies to obtain agreement for subsequent code changes.
- This process will be coordinated with the Zoning Code update.

Next Steps

- Obtain internal departmental approval. DEP will coordinate with the lead agency responsible for each Code chapter to prepare draft changes to the legislation.
- County Attorney for the lead agency reviews draft language for legality.
- Lead agency submits bill to the County Executive for concurrence and transmittal to the County Council for consideration.
- The Council process includes public hearings and assignment to a committee for review and recommendations prior to final adoption. The Council may amend the legislation prior to adoption.